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(74) Agents: GASHLER, Andrea, L. et al.; Campbell & Flores LLP, Suite 700, 4370 La Jolla Village Drive, San Diego, CA 92122 (US).			
(54) Title: MOLECULES THAT HOME TO VARIOUS SELECTED ORGANS OR TISSUES			
(57) Abstract The present invention provides molecules that selectively home to various normal organs or tissues, including to lung, pancreas, skin, retina, prostate, ovary, lymph node, adrenal gland, liver or gut; and provides molecules that selectively home to tumor bearing organs or tissues, including to pancreas bearing a pancreatic tumor or to lung bearing a lung tumor. The invention also provides conjugates, comprising an organ or tissue homing molecule linked to a moiety. Such a moiety can be, for example, a therapeutic agent or a detectable agent. The invention also provides a method of identifying a membrane dipeptidase (MDP)-binding homing molecule that selectively homes to lung endothelium. The method includes the steps of contacting MDP with one or more molecules; and determining specific binding of a molecule to the MDP, where the presence of specific binding identifies the molecule as a MDP-binding homing molecule that selectively homes to lung endothelium. Such MDP-binding homing molecules can be linked to a moiety and, when administered to a subject as a conjugate, can selectively direct the moiety to lung endothelium in the subject.			

*(Referred to in PCT Gazette No. 46/1999, Section II)

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INTERNATIONAL SEARCH REPORT

International Application No.
PCT/US 99/05284

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C07K7/06 C07K7/08 A61K38/08 A61K38/10 A61K31/195
G01N33/68 G01N33/566 A61K47/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C07K A61K G01N C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 10507 A (JOLLA CANCER RES FOUND) 20 March 1997 (1997-03-20) cited in the application the whole document	1-7, 84-88, 91-99, 103-123
A	POLGREN A ET AL: "IDENTIFICATION OF MUSCLE HOMING SEQUENCES BY USING PHAGE DISPLAY LIBRARIES OF PEPTIDES" TUMOR BIOLOGY, vol. 18, 1 January 1997 (1997-01-01), page 77 XP002910201 the whole document	1-7, 84-88, 91-99, 103-123

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search

18 January 2000

Date of mailing of the international search report

15. 02. 2000

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INTERNATIONAL SEARCH REPORT

Inter. nat Application No
PCT/US 99/05284

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ARAP E.A.: "Cancer treatment by targeted drug delivery to tumor vasculature in a mouse model" SCIENCE, vol. 279, 16 January 1998 (1998-01-16), pages 377-380, XP002115543 LANCASTER, PA US the whole document	1-7, 84-88, 91-99, 103-123
A	PASQUALINI R ET AL: "ORGAN TARGETING IN VIVO USING PHAGE DISPLAY PEPTIDE LIBRARIES" NATURE, vol. 380, 28 March 1996 (1996-03-28), pages 364-366, XP002055919 ISSN: 0028-0836 abstract	1-7, 84-88, 91-99, 103-123
A	WO 97 26918 A (SPRINGER CAROLINE JOY ;MARAIS RICHARD (GB); CANCER RES CAMPAIGN TE) 31 July 1997 (1997-07-31) the whole document	1-7, 84-88, 91-99, 103-123
P,A	WO 98 10795 A (BURNHAM INST) 19 March 1998 (1998-03-19) the whole document	1-7, 84-88, 91-99, 103-123
T	RAJOTTE, D. ET AL.: "Membrane dipeptidase is the receptor for a lung-targeting peptide identified by in vivo phage display." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 274, no. 17, 23 April 1999 (1999-04-23), pages 11593-11598, XP000869582 the whole document	84-88, 91-99, 103-123

INTERNATIONAL SEARCH REPORT

Int. l. application No.
PCT/US 99/05284

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 1,3-7(all partially)
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☒ Claims Nos.: 1,3-7(all partially)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1-7, 84-88, 91-99, 103-123
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claim 5 encompasses diagnostic methods practised on the human/animal body and claim 7 and , 88, 91-99 and 103-123 are directed to methods of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.1

Claims Nos.: 1,3-7(all partially)

Rule 39.1(iv) PCT - Diagnostic method practised on the human or animal body

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

Continuation of Box I.2

Claims Nos.: 1,3-7(all partially)

Present claim 1 relates to a compound defined by reference to a desirable characteristic or property, namely the selective homing to the vasculature of the prostate.

The claim covers all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such compounds. In the present case, the claim so lacks support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning.

The claim also lacks clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible.

Consequently, the search has been carried out for those parts of the claims 1-7 which appear to be clear, supported and disclosed, namely those parts relating to the compounds defined in claim 2 and in TABLE 7.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-7

Peptides that selectively home to the vasculature of the prostate and their use for diagnostic and medical purposes.

2. Claims: 8-16,89,90,100-102(all complete), 88,97-99,109-114, 117(all partially)

Peptides that selectively home to the vasculature of the lung and their use for diagnostic and medical purposes.

3. Claims: 17-24

Peptides that selectively home to the vasculature of the skin and their use for diagnostic and medical purposes.

4. Claims: 25-33

Peptides that selectively home to the vasculature of the retina and their use for diagnostic and medical purposes.

5. Claims: 34-41

Peptides that selectively home to the vasculature of the pancreas and their use for diagnostic and medical purposes.

6. Claims: 42-52

Peptides that selectively home to the vasculature of the gut and their use for diagnostic and medical purposes.

7. Claims: 53-59

Peptides that selectively home to the vasculature of the ovary and their use for diagnostic and medical purposes.

8. Claims: 60-70

Peptides that selectively home to the vasculature of the adrenal gland and their use for diagnostic and medical purposes.

9. Claims: 71-77

FURTHER INFORMATION CONTINUED FROM PCT/86A/ 210

Peptides that selectively home to the vasculature of the liver and their use for diagnostic and medical purposes.

10. Claims: 78-83

Peptides that selectively home to the lymph node and their use for diagnostic and medical purposes.

11. Claims: 84-87,91-96,103-108,115,116,118-123(all complete),
88,97-99,109-114,117

Method of identifying a MDP-binding homing molecule that selectively homes to lung endothelium, the compounds obtained and their diagnostic and medical use

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. Appl. No.

PCT/US 99/05284

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9710507 A	20-03-1997	US 5622699 A	22-04-1997
		AU 6374098 A	18-06-1998
		AU 693723 B	02-07-1998
		AU 6973996 A	01-04-1997
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		DE 773441 T	04-03-1999
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		EP 0927045 A	07-07-1999

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